CLAIMS

1. A solenoid-operated safety valve device (1) for control of the supply of a flow of a fluid, such as a gas or a liquid, in particular water, to utiliser apparatus, comprising

a duct (3, 10, 10', 4) with an inlet (3) and an outlet (4) intended to be connected to a fluid source and to the utiliser apparatus, respectively, and in which are formed first and second valve seats (5, 6) in series with one another, each between a respective inlet chamber (8, 12) and an associated outlet duct (9, 13);

first and second interception solenoid valve devices (16, 17) associated with the first and second valve seat (5, 6) respectively, and each comprising a respective movable shutter (18; 28) cooperating with one of the said seats (5; 6); each interception solenoid valve device (16, 17) comprising an electromagnetic control portion (35, 50; 36, 50) which includes a respective movable core (35, 36) the position of which is controlled by a control winding (50);

the solenoid-operated safety valve device being characterised in that the electromagnetic control portions (35, 50; 36, 50) of the said interception solenoid valve devices (16, 17) are disposed parallel to an intermediate portion (10) of the said duct (3, 10, 10', 4) lying between the said valve seats (5, 6) with the respective cores (35, 36) aligned and movable in opposite directional senses along a direction essentially parallel to the axis of the said intermediate portion of the duct (10), within a single winding or control coil (50).

2. A solenoid-operated safety valve device according to Claim 1, in which

the first and second interception solenoid valve devices (18, 35, 37, 41, 50; 28, 36, 38, 42, 50) each comprise a respective movable shutter (18; 28) interposed between the associated inlet chamber (8; 12) and a pilot chamber (22; 32) which communicates with the said inlet chamber (8; 12) via a restricted passage (21, 31) and which can be put into communication with the associated outlet duct (9, 10; 13, 10') via a discharge passage (43; 44) controlled by a piloting solenoid valve (35, 37, 41, 50; 36, 38, 42, 50) which includes a shutter (37; 38) carried by a movable core (35, 36) the position of which is controlled by a control winding (50; 50);

the said piloting solenoid valves (33, 37, 41, 50; 36, 38, 42, 50) being disposed parallel to an intermediate portion (10) of the said duct (3, 10, 10', 4) lying between the said valve seats (5, 6).

3. A solenoid-operated safety valve device according to Claim 2, in which the said valve seats (5, 6) are orientated in a direction forming an angle, in particular of about 90°, with respect to the axial direction of the said intermediate duct portion (10).

4. A solenoid-operated safety valve device according to Claim 2, in which the upstream valve seat (5) is orientated in a direction forming an angle, in particular of about 90°, with respect to the axial direction of the said intermediate duct portion 10), and the downstream valve seat (6) is orientated in a direction substantially parallel to the axial direction of the said intermediate duct portion (10).

5. A solenoid-operated safety valve device according to Claim 1, in which the said valve seats (5, 6) are orientated

in directions substantially parallel to the axial direction of the said intermediate duct portion (10).

6. A solenoid-operated safety valve according to Claim 2, in which the said valve seats (5, 6) are orientated in directions substantially parallel to the axial direction of the said intermediate duct portion (10).

7. A solenoid-operated safety valve device according to Claims 3 or 4, in which the discharge passage (43) associated with the upstream piloting solenoid valve (35, 37, 41, 50) opens into the said intermediate duct portion (10).

8. A solenoid-operated safety valve device according to Claim 7, when dependant on Claim 3, in which the discharge passage (44) associated with the downstream piloting solenoid valve (36, 38, 42, 50) opens into a second duct portion (10') which is transversely offset with respect to the said intermediate duct portion (10) and which communicates with the outlet connector (4).

9. A solenoid-operated safety valve device according to Claim 8, in which the said second duct portion (10') has an inlet end alongside the outlet end of the said intermediate duct portion (10) and the discharge passage (44) associated with the downstream piloting solenoid valve (36, 38, 42, 50) opens into the inlet end of the said second duct portion (10') at a point geometrically upstream and hydraulically downstream of the outlet end of the said intermediate duct portion (10).

10. A solenoid-operated safety valve device according to Claim 4 or Claim 6, in which the or each discharge passage

(44'; 43', 44') controlled by the piloting solenoid valve (17; 16, 17) associated with a valve seat (6; 5, 6) orientated in an inclined direction with respect to the axial direction of the said intermediate duct portion (10) is formed through the shutter (28; 18, 28) correspondingly associated with the valve seat (6; 5, 6).

11. A solenoid-operated safety valve device according to Claim 1 or Claim 5, wherein the shutters (18, 28) of the interception solenoid valve devices (16, 17) are connected to the said movable cores (35, 36).

12. A solenoid-operated safety valve device according to one of Claims 1, 5 and 11, wherein said intermediate duct portion (10) is obtained in a moulding operation, in an intermediate body (80) of plastic material overmoulded around the said control winding (50).

13. A solenoid-operated safety valve device according to Claim 11 or 12, wherein a ferromagnetic casing (71) made in one piece is associated with the control winding (50).

14. A solenoid-operated safety valve device according to any of the preceding claims, wherein to the inlet connector (3) there is associated a flow rate regulator (82) bayonet-fitted in a seat of said inlet connector (3).

15. A solenoid-operated safety valve device according to any preceding Claim, in which a tubular element (70) of ferromagnetic material within which the said cores (35, 36) are movably mounted extends into the said winding or coil (50), this tubular element (70) having an axial extent such that its ends are close to the cores (35, 36) in the de-

excited condition of the said winding or coil (50).